


## Self-medication and inappropriate use of antimicrobials in municipalities of Rondônia in the legal Amazon

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### ABSTRACT

The irrational use of medicines is strongly influenced by issues such as self-medication, advertising and biased advertising. According to the World Health Organization (WHO), antimicrobials have often been used inappropriately, without observing some criteria, such as: time of use, suggested effective dosage, correct indications, among others, can accelerate the defense mechanisms of bacteria, causing the drug to lose its efficiency. Bacterial resistance is a global health problem, rapidly growing and with varying prevalence between countries, and increasingly becoming a serious problem. The irrational use of antimicrobials can lead to bacteria adapting and multiplying, increasing and promoting antibiotic resistance. Under the practice of storing medicines, it was observed that, according to the data obtained from the forms, in Teixeiraópolis, approximately 78%, that is, 39 people interviewed, out of a total of 50, have the habit of storing medicines at home, while in Mirante da Serra 42 (84%) interviewees stated that they do this practice and in the municipality of Ji-Paraná 81 (81%) of the 100 interviewees. Therefore, it is important that there are always permanent actions aimed at health education, which are of a practical and effective nature, capable of involving the entire community so that situations such as the one described in our study are minimized.

**Keywords:** Self-medication, Irrational use, Antimicrobials, Bacterial resistance.

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## INTRODUCTION

Self-medication is a topic of global discussion, its consequences can lead to late diagnosis and worsening, however, according to Naves, *et.al.*, 2010, they already considered that the private sector was largely responsible for contributing to self-medication. This fact can be confirmed, as it is attributed to the clerks, almost always without any academic qualification, that within a capitalist system, they are forced to practice "push therapy" to achieve better wage gains<sup>1</sup>.

Another striking fact that contributes to self-medication is related to health policies, which are not able to serve the population in a timely manner, which certainly leads the individual to seek alternative means for treatment. Thus, it is possible to observe the various practices of indications, leading to self-medication, especially of drugs used for infections, which can develop bacterial resistance, resulting in worsening of the pathological state of the same.

The fight against bacterial infections only became possible with the discovery of antibiotics. The first antibiotic to be used successfully was penicillin, discovered by Alexander Fleming in 1928 and which became available as a drug from 1940. By the mid-1940s, British and American industries were producing billions of units of penicillin. Although initial production was reserved exclusively for military personnel, penicillin became available to the civilian population in 1944<sup>2</sup>.

According to the World Health Organization (WHO)<sup>3</sup>, antibiotics have been used, often inappropriately, and in various clinical situations without evidence to prove their real indication. Antibiotics are used unnecessarily, in up to 60% of cases of respiratory infections.

The administration of antibiotics, without observing some criteria, such as: time of use, suggested effective dosage, correct indication, among others, can accelerate the defense mechanisms of bacteria, causing the drug to lose its efficiency<sup>4</sup>. Thus, it is observed that the sale of antibiotics in Brazil exceeds the sale of other drugs such as analgesics and in the last decade the increase in the sale of generic drugs has practically tripled, even observing the control by the National Service for the Management of Controlled Products (SNGPC)<sup>5</sup>.

Bacterial resistance has been considered a global health problem, rapidly growing and with variable prevalence among countries. Therefore, in developed countries, the consumption of antibiotics has been studied and control and surveillance measures have been adopted, limiting the exposure of people to this group of drugs, while in underdeveloped countries, even adopting special control measures, there is no minimization of the problems recurrent to indiscriminate use<sup>6</sup>.

It is worth noting that prior to resolution RDC No. 20, ANVISA, of May 5, 2011, which provides for the *control* of drugs based on antimicrobial substances for use under a prescription regime, alone or in combination<sup>5</sup>, the responsibility for indiscriminate use was attributed to pharmacies. However, in approximately 20 years after the establishment of control in distribution, there has been an increasing aggravation, which can be attributed to the non-observance or lack of



knowledge of prescribers, linked to advertisements, distribution of samples, and putting an end to the precariousness of the teaching of medicine and health professions in the country<sup>7</sup>.

The rate of hospital infection has increased mainly due to the indiscriminate use of antibiotics, combined with poor local conditions, overcrowding, precarious asepsis and lack of awareness of health professionals in relation to compliance with preventive measures, the wide and indiscriminate use of antibiotics in hospitals is considered a determining factor in the selection of bacteria that cause hospital infection resistant to the vast majority of antibiotics<sup>8</sup>.

The issue of indiscriminate use of antibiotics is considered a public health problem with a strong economic and social impact, being a cause for concern for all health professionals. Therefore, this study aimed to evaluate the knowledge and use of antimicrobials in the population, considering the demographic index of three municipalities, according to the index is: small, medium and large.

## METHODOLOGY

This is a cross-sectional, descriptive, qualitative and quantitative study, involving the population of small, medium and large municipalities, respectively: Teixeiraópolis, Mirante da Serra and Ji-Paraná, all located in the jurisdiction of the State of Rondônia, also considering the knowledge and use of medicines, especially antimicrobials. It was approved by the Research Ethics Committee, according to Resolution 466 of December 12, 2012 of the National Health Council (CNS)<sup>12</sup>, with CAAE No. 2,803,365 (date of opinion: August 6, 2018). The data collection of the research on the use of antimicrobial was carried out through forms distributed to the population of Teixeiraópolis, Mirante da Serra and Ji-Paraná, in the form of a voluntary survey.

The forms used in the research were elaborated with closed questions, based on questions about the correct use of medication, especially antimicrobials, as well as information about the dosage, storage and dose of administration. The research was carried out with people of both sexes, different social levels, and various age groups, freely and spontaneously, without identifying the identity of the participants.

The sample was determined in 200 forms, 50 of which were destined for the municipality of Teixeiraópolis, 50 for Mirante da Serra and 100 for the municipality of Ji-Paraná. In the data analysis, the tabulation of the results was developed and arranged in graphs for better visualization and understanding of the research.

## RESULTS AND DISCUSSION

According to the data obtained, it is observed that the population surveyed has the habit of storing medicines in their homes, perhaps due to the lack of efficient medical care or even ease of acquiring them in local pharmacies. In the municipality of Ji-Paraná it was observed that 90% of the

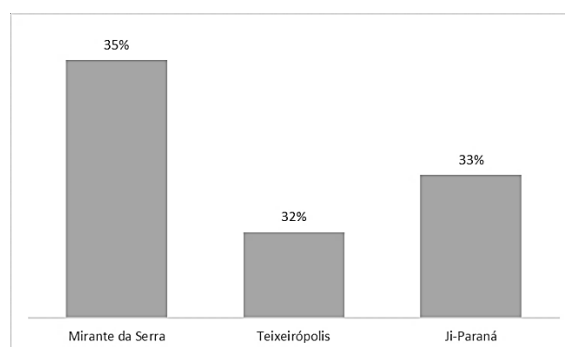
people have the habit of keeping medicines at home, in Mirante da Serra 86% and in Teixeiraópolis 92%. Thus, the practice of self-medication can be attributed, exposing patients/users to the risk of adverse drug reactions, which can lead to intoxication, worsening the health of the patient/user. Other factors, which are exposed, would be: efficacy, safety and, in the case of antimicrobials, resistance that can lead to the development of superinfections.

On the issue of self-medication, still on the use of antimicrobials, this is a serious problem, because if it is stored at home, it could mean that the patient received a prescription, used it and may have interrupted the treatment due to the disappearance of symptoms and improvement of the clinical condition. This fact has been widely observed in almost every state and without any proposal for its resolution.

In the question about which medicines people always have at home, it was found that, in addition to those used to combat symptoms caused by flu and colds, headaches and also medicines for throat infections, called by the population as medicines for sore throat, being a prohibited practice that contradicts the aegis of resolution RDC No 471/2023 Anvisa<sup>8</sup>.

This fact can be attributed to the main cause that could lead to the development of bacterial resistance, the main cause of the development of superinfection. Thus, under the practice of irrational storage of medicines, it was observed, according to the data obtained from the forms, that, in Teixeiraópolis, approximately 78%, that is, 39 people interviewed, of the total of 50 participants who answered the form, have the habit of storing medicines at home, while in Mirante da Serra 42 (84%) interviewees stated that they do this practice and in the municipality of Ji-Paraná 81 (81%) of the 100 participants interviewed.

FIGURE 1 - Percentages of people who store medicines in the municipalities of Ji-Paraná, Mirante da Serra and Teixeiraópolis



The practice of keeping several medicines stored at home, also called "home polypharmacy", is the inadequate way to guarantee access to medicines. However, keeping them stored will not impact the economy, and the same drug previously prescribed would not necessarily be used, even for a similar problem.



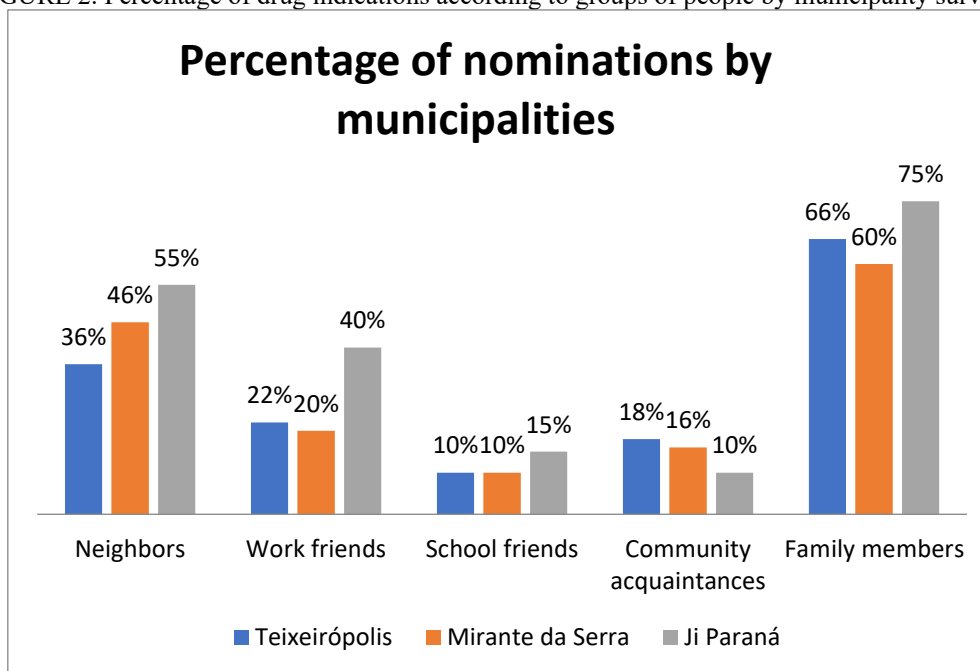
The medicines stored in homes, according to data from the formularies, are mainly those with special controls, according to health legislation, which are left over from previously prescribed treatments due to inconsistent prescriptions or, on the other hand, acquired without a prescription and even over-the-counter medicines. In addition to the risk of inappropriate use, the storage itself can affect the stability of the products, putting the health of the patient/user at risk and also the expired shelf life.

Figure 2 shows the main indications for medications, without medical and pharmaceutical guidance for the patient/user. Indications from neighbors, which presented the highest rates, reaching a percentage of approximately 55% (55) in Ji-Paraná, 46% in Mirante da Serra (23), and 36% in Teixeiraópolis (18). In the indications of friends, mainly from work, it was observed that in Ji-Paraná the index was 40% (40), in Mirante da Serra 20% (10), and in Teixeiraópolis 22% (11).

Considering recommendations from school friends, the index decreases a lot, presenting in the municipality of Ji-Paraná, a percentage of 15% (15), in Mirante da Serra, a percentage of 10% (5) of the interviewees was registered, Teixeiraópolis also presented the same percentage, 10% (5). Indications that occur among members of communities, which can be: churches, condominiums, clubs, among others, the percentages came close to the results presented by school friends, and thus, it was observed that in the municipality of Ji-Paraná, 10% (10) of the indications among members were registered, in Mirante da Serra, the percentage registered 16% (8) of the total participants, while in Teixeiraópolis, small municipality, totaled about 18% (9) of the survey participants who make nominations among members of the respective communities to which they belong.

Another curious fact is the indication of medicines made by family members, in this case, there was a greatly increased value, and according to the answers to the forms distributed in the municipalities mentioned, it was recorded that the municipality of Ji-Paraná had a rate of 75% (75) of people who make indications of medicines among family members, in the municipality of Mirante da Serra, a percentage of 60% (30) was recorded, and Teixeiraópolis, considered a smaller municipality, was recorded a value of 66% (33), according to the answers obtained in the forms. This fact can be explained by the circle of trust among family members, which would certainly facilitate the understanding of the indication.

FIGURE 2. Percentage of drug indications according to groups of people by municipality surveyed



We have to ask: who has never recommended medication to someone? It will be difficult to find such a person, because it is part of human nature. The interviewees did not answer differently, that is, most have already made indications. Table 1 shows the main indications, considering the answers obtained in the forms.

The interviewees answered that the most indicated medication was for headaches, with a percentage of 87% (87) in Ji-Paraná, Mirante da Serra 84% (42) and Teixeiraópolis 80% (40). In the case of possible sore throats, the indications were: 83% (83) in Ji-Paraná, Mirante da Serra were 76% (38) and Teixeiraópolis 84% (42), while for fever, in Ji-Paraná 88% (88), Mirante da Serra 88% (44), and Teixeiraópolis 82% (41).

Other indications were observed, the results were listed in Table 1, below, where it is possible to observe all the indications, through the symptomatology caused by any alteration in the body, which were mentioned in the forms. Thus, it can be observed that: headache, sore throat, fever and flu were the symptoms that presented the most indications, these results refer to the answers in general, without considering specific groups.

Table 1 – Percentages of indications in the municipalities of Ji-Paraná, Mirante da Serra and Teixeiraópolis, distributed by pathologies

<b>PATHOLOGY</b>	<b>JÍ PARANÁ</b>	<b>MIRANTE DA SERRA</b>	<b>TEIXEIRÓPOLIS</b>
Headache	87% (87)	84% (42)	80% (40)
Sore throat	83% (83)	76% (38)	84% (42)
Fever	88% (88)	88% (44)	82% (41)
Cold and Flu	90% (90)	90% (45)	86% (43)
Diarrhea	44% (44)	40% (20)	46% (23)
Allergy	57% (57)	48% (24)	56% (28)
Puke	69% (69)	60% (30)	52% (26)
Eye pain	23% (23)	32% (16)	26% (13)
Stomach pain	55% (55)	58% (29)	48% (24)

Within the issue of the indiscriminate use of medications, which were described above, despite causing adverse effects and consequences, often serious to the patient/user, the use of antimicrobials, without a doubt, is the one that deserves a little more attention, because the appearance of strains of bacteria resistant to these antibiotics is attributed to the indiscriminate use of antimicrobials, which can certainly lead to the patient's death from sepsis. It can be observed that the indication for sore throat, considering antimicrobials, is in second place in percentages of indication, in the municipalities of Ji-Paraná and Mirante da Serra, however, in Teixeiraópolis, according to the data collected in the forms, there was a percentage attributing the first indication of antimicrobials.

The indication of medication is relative, and a circle of trust or even known experiences with the use of certain medications is often attributed among people. Thus, the question is: Why does the patient not seek the doctor first? It would be due to the difficulty, having to face long lines and a long waiting time, or perhaps the distrust in knowledge on the part of health professionals, who are currently put to the test.

A curious fact, presented by ROCHA, 2014, in a postgraduate monograph, women consult more doctors, about 69% compared to men, which was approximately 43%<sup>9</sup>. However, according to data presented by SINITOX, women have more records of drug poisoning than men<sup>13</sup>.

The evolution of registered cases of human poisoning by toxic agent in Brazil, according to data presented on the SININOX website, the numbers of poisoning caused by medicines, compared to the second most cited which were pesticides, the difference reached approximately 24% higher for medicines. However, the rate of deaths caused by these poisonings was higher for pesticides<sup>14</sup>.

In addition to the indications by family members, neighbors, co-workers, the advertising of medicines has been a frequent stimulus for their inappropriate use. Above all, because it tends to highlight the benefits and minimize the risks and possible adverse effects, giving the impression, especially to the public without any knowledge about medicines and their respective uses, which are presented as innocuous products, influencing consumption if they were any other commodity.

Nowadays, most people know, or at least have notions about what an antibiotic is, and many already compare some drug of this class without a prescription and only on the recommendation of



family or friends. This fact, in addition to putting the health of the patient/user at risk, also disrespects the legislation that regulates the sale of antimicrobials, RDC 20, Anvisa, of May 5, 20117, updated by RDC 471, Anvisa, of February 23, 20218.

Still regarding antimicrobials, the forms were asked about the dosage of these drugs, and the answers obtained are described in Table 2, presented below. It was observed that following the dosage presented in the prescription, only a small percentage follow, this fact may be linked to information, guidance, indication of unqualified people, in short, several factors contribute to this.

Table 2 – Mode of antimicrobial use in the municipalities of Ji-Paraná, Mirante da Serra and Teixeiraópolis

<b>PATHOLOGY</b>	<b>JÍ PARANÁ</b>	<b>MIRANTE DA SERRA</b>	<b>TEIXEIRÓPOLIS</b>
They strictly obey the prescription	30% (30)	22% (11)	26% (13)
Only use until symptoms improve	50% (50)	56% (28)	50% (25)
Can't use it properly	10% (10)	12% (6)	14% (7)
Change the prescription on their own	5% (5)	4% (2)	2% (1)
Associates with anti-inflammatory	5% (5)	6% (3)	8% (4)

Self-medication can have serious consequences for patients/users, such as: undesirable effects and masking of the symptoms of evolutionary diseases. However, many of these users know the results that can occur with the interruption of the prescribed treatment, even so, they put themselves at risk by interrupting the prescribed treatment.

Necessary measures, as a preventive form that can contribute to minimize the risks caused by self-medication and consequently make visible the population's awareness of the dangers of the adverse effects that certain drugs can cause, corroborate the correct use of medication, improving the quality of life of the population.

Administering antimicrobials irrationally can cause bacteria to adapt and multiply, increasing and promoting antibiotic resistance. However, the indiscriminate use of an antibiotic can potentiate the appearance of a resistant bacterial population, making its treatment increasingly difficult.

Antibiotics are powerful drugs against bacteria, and for this reason, they are able to act against infection-causing agents and have been of great use in saving lives worldwide, but their inappropriate use can develop bacterial resistance, putting at risk the treatment options for infections caused by microbial agents. Thus, according to the results presented in this work, antimicrobials may become ineffective or even present modified activity in the fight against infections caused by microorganisms that have become resistant, due to the indiscriminate and inappropriate use of antimicrobials.





## FINAL CONSIDERATIONS

The prevention of bacterial resistance involves multidisciplinary actions focused mainly on the rational use of antimicrobials and the optimization of infection control actions. A fact of great relevance to this discussion is that the population still buys antimicrobials without any type of control, despite the current regulations, due to lack of effective inspection, some people still stop treatment with these drugs before the minimum period of 7 days of treatment recommended by the World Health Organization (WHO), as soon as the symptoms disappear the treatment is interrupted. Despite the WHO recommendations, that antimicrobial treatment should last for 5 days after the end of the fever, however, most users know the risks, but continue to act wrongly, interrupting use before the prescribed period.

The efficiency of antibiotics can be compromised if they are not ingested according to the determined schedule, as the drugs remain in the body for a certain period of time, and their doses must be administered rigorously to maintain the dose. To ensure patient safety, it is essential to raise awareness among the entire population about the risk of irrational use of medicines, especially antimicrobials.

The systemic approach to medication errors is essential in the implementation and improvement of Pharmaceutical Services practices, aiming at greater safety in the health care of the population. The training of professionals, who can safely avoid these abuses and thus promote the transformation towards the development of a safer system, promoting the strengthening of the medication administration process, making them safer and more effective.



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